



Operating Instructions

ZF Marine Transmissions
ZF 2500 Series

3082 758 103e

The following safety instructions appear in this manual:

NOTE

Refers to special processes, techniques, data, use of auxiliary equipment, etc.

CAUTION

This is used when incorrect, unprofessional working practices could **damage the product**.



DANGER

This is used when lack of care could lead to **personal injury or death**.

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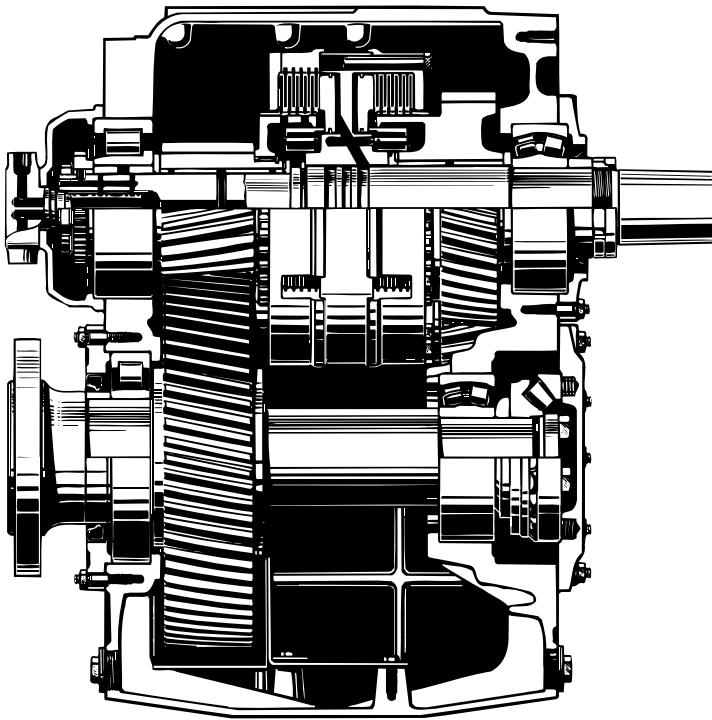
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Operating instructions

1st edition



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ZF-marine transmissions

ZF 2500, ZF 2550
ZF 2500 U, ZF 2550 U
ZF W 2500
ZF 2560

ZF 2555
ZF 2555 U
ZF 2560 P

ZF 2500 A, ZF 2550 A
ZF 2555 A

ZF 2500 NR, ZF 2550 NR
ZF 2500 NRU, ZF 2550 NRU
ZF W 2500 NR
ZF 2560 NR

ZF 2555 NR
ZF 2555 NRU
ZF 2565 NR

ZF 2500 NRA, ZF 2550 NRA
ZF 2555 NRA

The operating instructions are applicable to the standard transmission version. Variations are possible according to special customer requirements and operating conditions. If the data contained in the operating instructions are different from those in the technical or commercial specification, then the data in the specifications apply.

Important!

Ensure that these operating instructions are always on-hand. Read the operating instructions carefully, paying particular attention to the safety instructions.

Some of the illustrations contained in the operating instructions may differ from your installed transmission. Furthermore, safety devices and covers may sometimes be omitted to enable clearer illustration.

1 Description

1.1 Power, speed, rotation direction, ratio, type plate

ZF marine transmissions are designed and manufactured according to the regulations of the various classification societies. The input powers approved by the classification societies depend on input speed, the class of the craft and the differing design regulations currently in force. In most cases, the maximum torques approved by ZF are also fully accepted by the classification societies.

Upon request, either a full test or factory acceptance test can be carried out by the classification society specified by the customer.

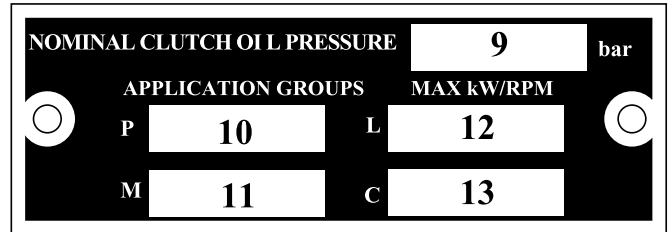
Normally, the input shaft rotates in a clockwise direction (looking at the transmission input flange). Transmissions which are specially designed for an anti-clockwise input shaft rotation (looking at the transmission input flange) have an arrow on the transmission input end to show the rotation direction.

The respective ratio is stamped on the transmission type plate which is mounted on top of the transmission housing.

Data included on the type plate:



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- 1 Model
- 2 Serial no.
- 3 Parts list no.
- 4 Customer ref. no.
- 5 Transmission ratio and ID letter for oil pump ratio
- 6 Oil capacity
- 7 Mass (dry)
- 8 Lubricants, see ZF List of lubricants TE-ML 04
- 9 Clutch oil pressure (nominal)
- 10 Intermittent operation at very widely differing engine speeds
- 11 Intermittent operation at differing engine speeds
- 12 Intermittent operation at widely differing engine speeds
- 13 Continuous operation at max. engine power

NOTE

For items 10 - 13, also refer to Section 12 „Maintenance“

Information under 1, 2, 3 and 5 must be quoted when querying problems and ordering spare parts etc.

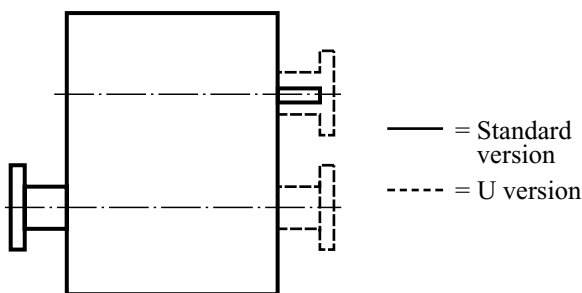
The letter stamped after the transmission ratio under 5 has the following meanings:

Letter	Rated engine speed during cont. operation	Engine idling speed
A	1650 to 2500	= 415
B	1100 to 1650	= 275

Oil pump ratio A is the standard version.

1.2 General layout

The ZF 2500 Series consists of triple-shaft reversing and reduction transmissions with double clutch on the transmission input shaft. The main components subject to wear are concentrated on the input shaft and are therefore easily accessible. The output shaft is arranged below the input shaft.



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The cast-housings are very torsionally rigid and (with the exception of the ZF W 2500) are made from a largely sea-water resistant light metal alloy. The ZF W 2500 transmission housing is made from grey casting. The machined surfaces and threaded connections required for transmission and bell housing mountings are included as standard.

To ensure long life and low operating noise levels, the teeth of all power-transmitting gears are designed with high safety levels in mind, i.e. case-hardened, ground and subsequently subjected to special treatment. The shafts run in anti-friction bearings. Thrust bearings are incorporated in the transmission to absorb propeller thrust. The reversing clutches arranged on the input shaft are multi-disc clutches with steel/sinter discs arranged alternately and operated by means of oil pressure.

The high delivery rate of the oil pump ensures rapid clutch response. During gearshift procedure, the contact pressure of the clutches is regulated to ensure smooth operation.

At the same time, there is an increased supply of oil to the clutch being operated, i.e. to ensure quick dissipation of the heat created during shift procedure enabling the clutches to operate efficiently under extreme load conditions.

The heat caused by trolling operation is also reliably dissipated, even during continuous operation.

An easily-replacable control unit is installed on the transmission housing, fitted with all valves, slides and control equipment required for the operating and lubricating oil circuits.

The control unit on the basic version is actuated mechanically by means of a control lever. Pneumatic or electrical actuation systems are also available if required.

Deviations in the NR series:

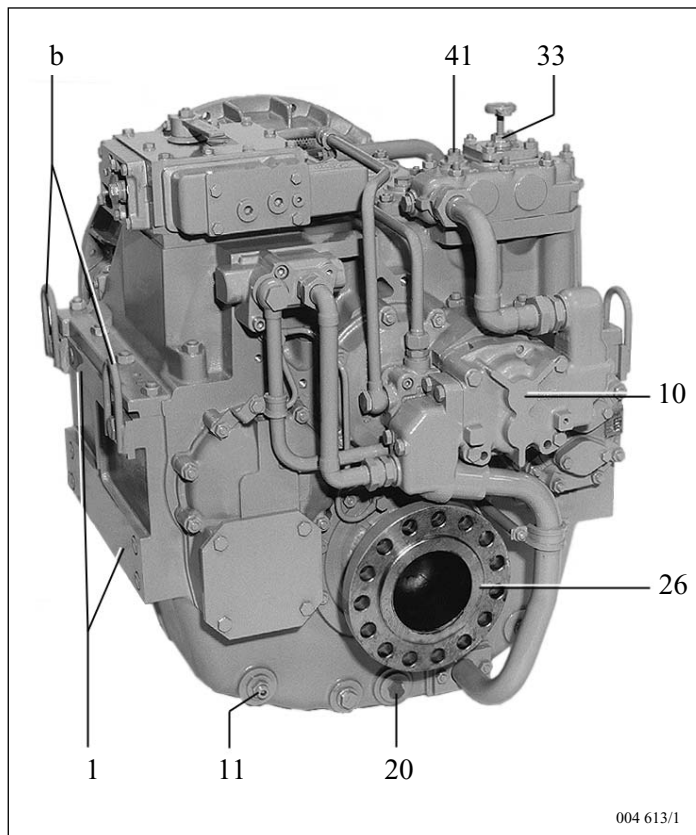
The ZF NR series is a range of step-up transmissions with a clutch arranged on the transmission input shaft. Depending on version, the output rotation direction can be the same or opposite to the input rotation direction. Otherwise, design and external dimensions are exactly the same as the ZF series.

Transmission views (basic transmission)

ZF 2500, ZF 2550

2 Transmission views

2.1 Transmission views (basic transmission)



- 1 Transmission mounting surfaces
- 2, 21, 27 Clutch oil pressure measuring points
- 10 Engine-dependent oil pump
- 11, 12, 41 Oil temperature measuring points
- 14 Coolant inlet/outlet
- 15 Oil cooler
- 20 Oil drain
- 26 Output
- 33 Oil filter
- b Suspension lugs for transport/handling

